# ABSTRACT OF THE DISCLOSURE

A method for providing predictive maintenance of a device, comprises the steps of modeling as a time series of a discretely sampled signal representative of occurrences

5    of a defined event in the operation of the device, the time series being modeled as two-state first order Markov processes with associated transition probabilities, wherein one state applies when the number of the occurrences exceeds a certain threshold, and the other state  applies when the number of the occurrences falls below the certain threshold; computing the four transition probabilities the last N states $S_n$, where N is a

10   predetermined number, conducting a supervised training session utilizing a set of J devices, which have failed due to known causes and considering the two independent probabilities and, the training session comprising computing the two-dimensional feature vectors for the initial M windows of N scans, computing the two-dimensional feature vectors for the final N number of scans, plotting a scatter-diagram of all 2D feature

15   vectors, and deriving  a pattern classifier by estimating the optimal linear discriminant which separates the two foregoing sets of vectors; and applying the classifier to monitor the persistence of occurrences of the defined event in the operation of the device.